# VALIDATA

**Chemical Services, Inc.**

*4070 Balleycastle Lane, Duluth, GA 30097*

(770) 232-0130
(770) 232-5082 (Fax)
www.datavalidator.com


DATA VALIDATION SUMMARY
REPORT

| | |
|---|---|
| COMPANY: | URS Corporation |
| SITE NAME: | SSFL - Chemical Soil Background Study |
| CONTRACTED LAB: | Columbia Analytical Services, Inc. – Kelso, Washington |
| PROJECT NUMBER: | 29403634 |
| QA/QC LEVEL: | Level IV |
| EPA SOW/METHOD: | EPA SW-846 |
| VALIDATION GUIDELINES: | *USEPA Contract Laboratory Program National Functional Guidelines for Organic Superfund Data Review,* 2008*, USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review,* 2010 |
| SAMPLE MATRICES: | Soil & Water |
| TYPES OF ANALYSES: | Semivolatile Organics (SVOA), Polynuclear Aromatic Hydrocarbons (PAH), Pesticides (Pest.), Herbicides (Herb.), Formaldehyde (Form.), Perchlorate, Metals, Hexavalent Chromium (Hex. Cr), Fluoride, Nitrite, Nitrate+Nitrite, Nitrate, Cyanide (CN) |
| SDG NUMBER: | K1110689 |

## OVERVIEW

SAMPLES:

| Client Sample # | Lab Sample # | Matrix | SVOA | PAH | Pest. | Herb. |
|---|---|---|---|---|---|---|
| CZBS0102S005 | K1110689-001 | Soil | X | X | X | X |
| CZBS0100S005 | K1110689-002 | Soil | X | X | X | X |

| Client Sample # | Lab Sample # | Matrix | Form. | Perchlorate | Metals | Hex Cr |
|---|---|---|---|---|---|---|
| CZBS0102S005 | K1110689-001 | Soil | X | X | X | X |
| CZBS0100S005 | K1110689-002 | Soil | X | X | X | X |
| CZBS0100S005MS | K1110689-002MS | Soil | X | | | |

| Client Sample # | Lab Sample # | Matrix | Form. | Perchlorate | Metals | Hex Cr |
|---|---|---|---|---|---|---|
| CZBS0100S005MSD | K1110689-002MSD | Soil | X | | | |

| Client Sample # | Lab Sample # | Matrix | Fluoride. | Nitrite | Nitrate + Nitrite | Nitrate |
|---|---|---|---|---|---|---|
| CZBS0102S005 | K1110689-001 | Soil | X | X | X | X |
| CZBS0100S005 | K1110689-002 | Soil | X | X | X | X |
| CZBS0102S005MD | K1110689-001MD | Soil | | X | X | |
| CZBS0102S005MS | K1110689-001MS | Soil | | | X | |
| CZBS0102S005MSD | K1110689-001MSD | Soil | | | X | |

| Client Sample # | Lab Sample # | Matrix | Cyanide |
|---|---|---|---|
| CZBS0102S005 | K1110689-001 | Soil | X |
| CZBS0100S005 | K1110689-002 | Soil | X |

*All metals were analyzed by ICP, ICP-MS, and CVAA (Mercury)

SUFFIX CODES: D = FIELD DUPLICATE, DL = DILUTION, MD = MATRIX DUPLICATE, MS = MATRIX SPIKE, MSD = MATRIX SPIKE DUPLICATE
RE = REANALYSIS

DATA REVIEWERS: Carla Butler, Amy L. Hogan, Kevin C. Harmon, Diana Levy

RELEASE SIGNATURE: Digitally signed by: Diana Levy
Date: 2012.03.28



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Data Qualifier Definitions

| | | |
|---|---|---|
| J | - | The associated numerical value is an estimated quantity. |
| J+ | - | The associated numerical value is an estimated quantity, potentially biased high. |
| J- | - | The associated numerical value is an estimated quantity, potentially biased low. |
| R | - | The data are unusable (the compound/analyte may or may not be present). Resampling and reanalysis are necessary for verification. |
| U | - | The compound/analyte was analyzed for, but not detected. The associated numerical value is the sample quantitation limit. |
| UJ | - | The compound/analyte was analyzed for, but not detected. The sample quantitation limit is an estimated quantity. |

Protocol Qualifier Classification: The data point was outside the analytical method, data validation guidelines or project specific limits.

Advisory Qualifier Classification: The data point was qualified based on professional judgement of the validator.

**Note**: All qualifiers applied to the data in all analytical fractions are considered Protocol Qualifier Classification unless specifically noted as Advisory.

**REASON CODE DEFINITIONS**
**URS Santa Susana Field Laboratory**

a Analytical sequence deficiency or omission.
b Gross compound breakdown (4,4'-DDT/Endrin).
**c Calibration failure; poor or unstable response.**
d Laboratory duplicate imprecision.
e Laboratory duplicate control sample imprecision.
f Field duplicate imprecision.
g Poor chromatography.
h Holding time violation.
i Internal standard failure.
j Poor mass spectrographic performance.
k Serial dilution imprecision.
l Laboratory control sample recovery failure.
m Matrix spike/matrix spike duplicate recovery failure.
n Interference check sample recovery failure.
o Calibration blank contamination (metals/inorganics only).
p Preparation blank contamination (metals/inorganics only).
q Quantitation outside linear range.
**r Linearity failure in initial calibration.**
s Surrogate spike recovery failure
(GC organics and GC/MS organics only).
t Instrument tuning failure.
u No valid confirmation column (GC Organics only).
v Value is estimated below the MDA (Rads only).
w Retention time (RT) outside of RT window.
x Field blank contamination.
y Trip blank contamination.
z Method blank contamination.

DATA QUALIFICATION SUMMARY

Columbia Analytical Services, Inc. – K1110689 - Organics & Inorganics

SAMPLES: CZBS00102S005, CZBS0100S005

***SEMIVOLATILE ORGANICS***

**SUMMARY**

I.) General:

The analyses for Semivolatile Organics (phthalate compounds only) were performed using GC/MS according to SW-846 Method 8270C.

All laboratory data were acceptable without qualification.

**MAJOR ISSUES**

There were no Major Issues associated with this fraction of the SDG.

**MINOR ISSUES**

I.) Holding Times:

All Holding Time criteria were met. No action was required.

II.) GC / MS Tuning:

All GC / MS Tuning criteria were met. No action was required.

III.) Calibration:

Initial Calibration:

All Initial Calibration criteria were met. No action was required.

Continuing Calibration:

All Continuing Calibration criteria were met. No action was required.

IV.) Blanks:

Method Blanks:

There were no detections in the method blank associated with this SDG. No action was required.

Equipment Rinsate Blank:

No equipment rinsate blank was provided for this SDG. No action was required.

TICs:

TIC data were not submitted for this fraction of the SDG. No action was required.

V.) Surrogate Recoveries:

All Surrogate Recovery criteria were met. No action was required.

VI.) Laboratory Control Samples (LCS):

LCS:

One LCS/LCSD pair was analyzed by the laboratory for this fraction. All criteria were met. No action was required.

Reporting Limit LCS (RL LCS):

Lab Fortified Blanks (LFBs) KWG1111571-2 and KWG1111571-3 met all RL LCS criteria. No action was required.

VII.) Matrix Spike/Matrix Spike Duplicate (MS/MSD):

No MS/MSD analyses were performed on samples for this fraction. No action was required.

VIII.) Field Duplicates:

No field duplicate samples were identified for this fraction of the SDG. No action was required.

IX.) Internal Standards Performance (ISTD):

All ISTD criteria were met. No action was required.

X.) TCL Compound Identification:

All TCL Compound Identification criteria were met. No action was required.

XI.) Compound Quantitation and Reported Contract Required Quantitation Limits (CRQL):

All CRQL criteria were met. No action was required.

XII.) System Performance:

All System Performance criteria were met. No action was required.

***POLYNUCLEAR AROMATIC HYDROCARBONS (PAH)***

**SUMMARY**

I.) General:

The analyses for Polynuclear Aromatic Hydrocarbons were performed using GC/MS according to SW-846 Method 8270D-SIM.

All laboratory data were acceptable with qualification.

**MAJOR ISSUES**

There were no Major Issues associated with this fraction of the SDG.

**MINOR ISSUES**

I.) Holding Times:

All Holding Time criteria were met. No action was required.

II.) GC / MS Tuning:

All GC / MS Tuning criteria were met. No action was required.

III.) Calibration:

Initial Calibration:

All Initial Calibration criteria were met. No action was required.

Continuing Calibration:

All Continuing Calibration criteria were met. No action was required.

IV.) Blanks:

Method Blanks:

Phenanthrene was detected at 0.047 ug/kg in method blank KWG1110956-4. The positive result for this compound in sample CZBS0100S005, which was less than the CRQL, was flagged as undetected (U) with the result being raised to the CRQL. No action was required for associated sample CZBS0102S005 because the result was more than 5X the blank amount.

Equipment Rinsate Blank:

No equipment rinsate blank was provided for this SDG. No action was required.

TICs:

TIC data were not submitted for this fraction of the SDG. No action was required.

V.) Surrogate Recoveries:

All Surrogate Recovery criteria were met. No action was required.

VI.) Laboratory Control Samples (LCS):

LCS:

One LCS/LCSD pair was analyzed by the laboratory for this fraction. All criteria were met. No action was required.

Reporting Limit LCS (RL LCS):

Lab Fortified Blank (LFB) KWG1110569-1 met all RL LCS criteria. No action was required.

VII.) Matrix Spike/Matrix Spike Duplicate (MS/MSD):

No MS/MSD analyses were performed on samples for this fraction. No action was required.

VIII.) Field Duplicates:

No field duplicate samples were identified for this fraction of the SDG. No action was required.

IX.) Internal Standards Performance (ISTD):

All ISTD criteria were met. No action was required.

X.) TCL Compound Identification:

All TCL Compound Identification criteria were met. No action was required.

XI.) Compound Quantitation and Reported Contract Required Quantitation Limits (CRQL):

All CRQL criteria were met. No action was required.

XII.) System Performance:

All System Performance criteria were met. No action was required.

***PESTICIDES***

**SUMMARY**

I.) General:

The analyses for Pesticides were performed using GC according to SW-846 Method 8081A. Reporting limits for seven compounds for sample CZBS0102S005 and six compounds for sample CZBS0100S005 were elevated due to matrix interference. The presence of non-target background components in the chromatograms prevented adequate resolution at normal limits of the compounds flagged (i) by the laboratory. The normal reporting limits for all compounds exceeded the CRQL.

According to the laboratory case narrative, these samples contained PCB Aroclors at concentrations high enough to impact the pesticides results. In some instances, certain PCB congeners were suspected of being detected on both columns simultaneously within the retention time window of the target pesticides. When the resulting chromatographic peaks met the criteria of a detection as defined in the method, the values were reported. Results for 4,4'-DDT had contribution from confirmed PCB interferences on both columns within the established retention time window, resulting in reported values with a significant high bias.

Based on the professional judgment of the validator, who considered the detections of 4,4'-DDT

to be biased high based on the interference, the results for 4,4'-DDT in samples CZBS0102S005 and CZBS0100S005 were qualified as estimated (J).

All laboratory data were acceptable with qualification.

**MAJOR ISSUES**

There were no Major Problems with this fraction of the SDG.

**MINOR ISSUES**

I.) Holding Times:

All Holding Time criteria were met. No action was required.

II.) Instrument Performance:

All Instrument Performance criteria were met. No action was required.

III.) Calibration:

Initial Calibration:

All Initial Calibration criteria were met. No action was required.

Continuing Calibration:

All Continuing Calibration criteria were met. No action was required.

IV.) Blanks:

Method Blanks:

Methoxychlor was detected at 0.047 ug/kg in method blank KWG1111569-4. Since the compound was not detected in the associated samples, no action was required.

Equipment Rinsate Blank and Field Blank:

There were no equipment rinsate blanks or field blanks associated with this fraction of the SDG. No action was required.

V.) Surrogate Recoveries:

All Surrogate Recovery criteria were met. No action was required.

VI.) Laboratory Control Samples (LCS):

LCS:

One LCS/LCSD pair was analyzed by the laboratory for this SDG. All LCS criteria were met. No action was required.

Reporting Limit LCS (RL LCS):

The MRL LCS sample submitted for this fraction detected all compounds although the true values were greater than the CRQL values. No action was required.

VII.) Matrix Spike/Matrix Spike Duplicate (MS/MSD):

No MS/MSD analyses were performed on samples for this fraction. No action was required.

VIII.) Field Duplicates:

No field duplicate samples were identified for this fraction of the SDG. No action was required.

IX.) TCL Compound Identification:

The data user should be advised that where compounds were detected, the lab reported the lower result between the two columns where no evidence of matrix interference was observed.

Only those results above the reporting limit were reviewed for column percent difference.

| Sample | Compound | %D |
|---|---|---|
| CZBS0102S005 | 4,4'-DDE | 5.3% |
| | 4,4'-DDT | 58% |
| CZBS0100S005 | 4,4'-DDE | 15% |

Although the %D was greater than 25%, the result for 4,4'-DDT for sample CZBS0102S005 was previously flagged as estimated (J) based on confirmed PCB interferences so no action was required.

***HERBICIDES***

***SUMMARY***

I.) General:

The analyses for Herbicides were performed using GC according to SW-846 Method 8151A. Reporting limits for three compounds for sample CZBS0102S005 were elevated due to matrix interference. The presence of non-target background components in the chromatograms prevented adequate resolution at normal limits for the compounds flagged (i) by the laboratory.

All laboratory data were acceptable without qualification.

**MAJOR ISSUES**

There were no Major Problems with this fraction of the SDG.

**MINOR ISSUES**

I.) Holding Times:

All Holding Time criteria were met. No action was required.

II.) Instrument Performance:

All Instrument Performance criteria were met. No action was required.

III.) Calibration:

Initial Calibration:

All Initial Calibration criteria were met. No action was required.

Continuing Calibration:

All Continuing Calibration criteria were met. No action was required.

IV.) Blanks:

Method Blanks:

There were no detections in the method blanks associated with this fraction of the SDG. No action was required.

Equipment Rinsate Blank and Field Blank:

There were no equipment rinsate blanks or field blanks associated with this fraction of the SDG. No action was required.

V.) Surrogate Recoveries:

All Surrogate Recovery criteria were met. No action was required.

VI.) Laboratory Control Samples (LCS):

LCS:

One LCS/LCSD pair was analyzed by the laboratory for this SDG. All LCS criteria were met. No action was required.

Reporting Limit LCS (RL LCS):

The MRL LCS sample submitted for this fraction detected all compounds. No action was required.

VII.) Matrix Spike/Matrix Spike Duplicate (MS/MSD):

No MS/MSD analyses were performed for this fraction of the SDG. No action was required.

VIII.) Field Duplicates:

No field duplicate samples were identified for this fraction of the SDG. No action was required.

IX.) TCL Compound Identification:

The data user should be advised that where compounds were detected, the lab reported the lower result between the two columns where no evidence of matrix interference was observed. The MCPP result of 13,000 ug/kg for sample CZBS0100S005 was reported from the column with the higher result because of poor peak performance for the column with the lower result.

Only those results above the reporting limit were reviewed for column percent difference. No action was required.

***FORMALDEHYDE***

**SUMMARY**

I.) General:

The analyses for Formaldehyde were performed using GC according to SW-846 Method 8315A.

All laboratory data were acceptable without qualification.

**MAJOR ISSUES**

There were no Major Problems with this fraction of the SDG.

**MINOR ISSUES**

I.) Holding Times:

All Holding Time criteria were met. No action was required.

II.) Instrument Performance:

All Instrument Performance criteria were met. No action was required.

III.) Calibration:

Initial Calibration:

All Initial Calibration criteria were met. No action was required.

Continuing Calibration:

All Continuing Calibration criteria were met. No action was required.

IV.) Blanks:

Method Blanks:

There were no detections in the method blank associated with this fraction of the SDG. No action was required.

V.) Surrogate Recoveries:

The addition of Surrogate Compounds was not utilized by the laboratory for this fraction of the SDG. Since the method for this analysis does not specify that Surrogate compounds are required, the validator determined that data qualification was not necessary.

VI.) Laboratory Control Samples (LCS):

LCS:

One LCS was analyzed for this fraction of the SDG. All LCS criteria were met. No action was required.

Reporting Limit LCS (RL LCS):

An RL LCS was not submitted for this fraction of the SDG. No action was required.

VII.) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

MS / MSD analyses were performed on SDG sample CZBS0100S005. All MS / MSD criteria were met. No action was required.

VIII.) Field Duplicates:

There were no field duplicate samples identified for this fraction of the SDG. No action was required.

IX.) TCL Compound Identification:

All Compound Identification criteria were met. No action was required.

***PERCHLORATE***

**SUMMARY**

I.) General:

The analyses for Perchlorate were performed using HPLC/MS/MS according to SW-846 Method 6850.

All laboratory data were acceptable without qualification.

**MAJOR ISSUES**

There were no Major Problems with this fraction of the SDG.

**MINOR ISSUES**

I.) Holding Times:

All Holding Time criteria were met. No action was required.

II.) Instrument Performance:

All Instrument Performance criteria were met. No action was required.

III.) Calibration:

Initial Calibration:

All Initial Calibration criteria were met. No action was required.

Continuing Calibration:

All Continuing Calibration criteria were met. No action was required.

IV.) Blanks:

Method Blanks:

There were no detections in the method blank associated with this fraction of the SDG. No action was required.

VI.) Laboratory Control Samples (LCS):

LCS:

One LCS / LCSD set was analyzed by the laboratory for this SDG. All LCS criteria were met. No action was required.

Reporting Limit LCS (RL LCS):

An RL LCS was not submitted for this fraction of the SDG. No action was required.

VII.) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

MS / MSD analyses were not submitted for this fraction of the SDG. Data qualification based on the absence of MS / MSD data was not required, so no action was taken.

VIII.) Internal Standards Performance:

All ISTD criteria were met. No action was required.

VIII.) Field Duplicates:

There were no field duplicate samples identified for this fraction of the SDG. No action was required.

IX.) TCL Compound Identification:

All Compound Identification criteria were met. No action was required.

***TOTAL METALS***

**SUMMARY**

I.) General:

Aluminum, barium, boron, calcium, lithium, magnesium, manganese, phosphorus, potassium, sodium, strontium, tin, titanium, and zinc were analyzed by Inductively Coupled Plasma (ICP) according EPA method 6010B. Antimony, arsenic, cadmium, chromium, cobalt, copper, lead, molybdenum, nickel, selenium, silver, thallium, vanadium, and zirconium were analyzed by ICP-Mass Spectrometry (ICP-MS) according to EPA method 6020. Mercury was analyzed by cold vapor atomic absorption (CVAA) according to EPA method 7470A for aqueous samples and 7471A for soil samples.

Matrix Spike/Matrix Spike duplicate, Duplicate, and Serial Dilution results were taken from a separate client SDGs.

All laboratory data were acceptable with qualification.

**MAJOR ISSUES:**

There were no Major Issues with this fraction of the SDG.

**MINOR ISSUES:**

I.) Holding Times and Preservation:

All Holding Time and preservation criteria were met. No action was required.

II.) Calibration:

All Initial and Continuing Calibration criteria were met. No action was required.

III.) Blanks:

Preparation Blanks:

The following detections were reported for the preparation blank associated with the SDG soil samples:

| Blank | Matrix | Analyte | Result |
|---|---|---|---|
| K1110689MB | Soil | aluminum | 0.70 mg/kg |
| | | antimony | 0.013 mg/kg |
| | | barium | 0.08 mg/kg |
| | | cadmium | 0.009 mg/kg |
| | | calcium | 2.4 mg/kg |
| | | chromium | 0.08 mg/kg |
| | | cobalt | 0.010 mg/kg |
| | | lead | 0.022 mg/kg |
| | | manganese | 0.04 mg/kg |
| | | molybdenum | 0.03 mg/kg |
| | | nickel | 0.06 mg/kg |
| | | thallium | 0.017 mg/kg |

The results for antimony in the SDG samples were flagged as undetected (U) and the results were raised to the soil CRQL due to the preparation blank result greater than the MDL and sample result less than the soil CRQL.

All other detected soil sample results were greater than 10X the blank contamination, so no further action was required.

Calibration Blanks:

The following detections were the highest reported values for the calibration blanks associated

with the SDG soil samples:

| Blank | Analyte | Result |
|---|---|---|
| ICB | barium | 0.90 ug/L |
| | molybdenum | 0.04 ug/L |
| CCB2 | aluminum | -3.4 ug/L |
| | antimony | -0.097 ug/L |
| | cobalt | 0.009 ug/L |
| | lead | 0.014 ug/L |
| | mercury | -0.16 ug/L |
| | nickel | 0.06 ug/L |
| | strontium | 0.10 ug/L |
| | thallium | 0.011 ug/L |
| CCB3 | calcium | 10.3 ug/L |
| | manganese | -0.20 ug/L |
| CCB4 | boron | 3.0 ug/L |

The results for boron in both SDG samples, which were less than the CRQL, were flagged as undetected (U) with the results being raised to the CRQL.

The positive results for mercury in both SDG samples was flagged as estimated biased low (J-) since the sample result was less than 10X the CRQL and the negative blank value.

All detected sample results in the remaining analytes were greater than 5X the blank contamination, so no further action was required.

IV.) Interference Check Standards:

The following non-spiked analytes were detected in the ICSA or ICSAB samples at levels above the method detection limit (MDL) for the soil analytes:

| Analyte | MDL | Result |
|---|---|---|
| antimony | 0.018 ug/L | 0.2 ug/L |
| barium | 0.3 ug/L | 2.0 ug/L |
| boron | 2.0 ug/L | 3.0 ug/L |
| cadmium | 0.008 ug/L | 0.1 ug/L |
| chromium | 0.03 ug/L | 0.04 ug/L |
| cobalt | 0.002 ug/L | 0.7 ug/L |
| copper | 0.16 ug/L | 0.6 ug/L |
| lead | 0.01 ug/L | 0.1 ug/L |
| lithium | 2.5 ug/L | 10 ug/L |
| manganese | 0.1 ug/L | -3.0 ug/L |
| molybdenum | 0.04 ug/L | 49.2 ug/L |

| | | |
|---|---|---|
| nickel | 0.04 ug/L | 2.7 ug/L |
| Analyte | MDL | Result |
| phosphorus | 15.0 ug/L | 90 ug/L |
| selenium | 0.4 ug/L | 1.2 ug/L |
| sodium | 20 ug/L | 49 ug/L |
| titanium | 0.3 ug/L | 2.0 ug/L |
| vanadium | 0.04 ug/L | -0.1 ug/L |
| zirconium | 0.04 ug/L | 0.1 ug/L |

All sample results were >10X the analyte MDL and significantly greater than the ICS results, so no action was taken.

The ICSAB recovery criteria were met for soil analyses. No action was required.

V.) Laboratory Control Samples (LCS):

All LCS Recovery and LCSD duplicate precision criteria were met. No action was necessary. All aqueous LCS Recovery criteria were met. No action was necessary.

Reporting Limit LCS (RL LCS):

The RL LCS had detected results for all target analytes in this fraction, and was therefore acceptable. No action was required.

VI.) Duplicate Sample Analysis:

MD analyses were performed on client samples CZBS0045S055 and CZBS0079S005 from separate client SDGs. All duplicate criteria were met and no action was taken.

VII.) Matrix Spike / Matrix Spike Duplicate (MS/MSD):

MS / MSD analyses were performed on client samples CZBS0045S055 and CZBS0079S005 from separate client SDGs. The following %R's were outside the 75-125% QC limits.

| MS/MSD Sample | Analyte | %R |
|---|---|---|
| CZBS0045S055MS | antimony | 29.8 |
| CZBS0045S055MSD | antimony | 27.5 |
| CZBS0045S055MSD | manganese | 57.7 |

All Post spike criteria were. The positive and non-detect results for antimony and manganese in the SDG samples were flagged as estimated (J) and (UJ).

VIII.) Serial Dilution:

All ICP serial dilution criteria were met, so no action was taken.

X.) Field Duplicates:

There were no field duplicates associated with this SDG. No action was required.

XI.) Instrument QC data:

Instrument verification (ICP-MS Tune) test criteria were met. No action was required.

Method 6020 suggests but does not require that every analyte have an internal standard that is within 50 atomic mass units (amu) from the quantitation isotope amu. Several of the analytes of interest for the ICP-MS had associated Internal Standards with an amu difference of greater than 50. The laboratory indicated this was done to minimize interferences. Because the method guidance is not mandatory and other quality control indicators demonstrate the analyses were in control, in the professional judgment of the validator, no data qualification was necessary

XII.) Compound Identification:

Compound Identification criteria were met. No action was required.

***HEXAVALENT CHROMIUM***

**SUMMARY**

I.) General:

The analyses for hexavalent chromium were performed using ion chromatography according to EPA Method 7196A.

The results for hexavalent chromium in the SDG samples, which consisted entirely of non-detects, were rejected (R) based on extremely low MS / MSD recoveries.

**MAJOR ISSUES:**

I.) Matrix Spike / Matrix Spike Duplicate (MS/MSD):

MS / MSD analyses were performed on a client sample from SDG K1110641. The Percent Recoveries (%Rs) were 0% for both samples, which were below the 75-125% QC limits. A Post

digestion spike was analyzed with a 68% recovery, which is below the 75-125% QC limits. Based on the failure of both the MS / MSD analyses and the post spike analyses, all samples results for hexavalent chromium in the SDG samples, which consisted entirely of non-detects, were rejected (R).

**MINOR ISSUES:**

I.) Holding Times:

All Holding Time criteria were met. No action was required.

II.) Calibration:

All Initial and Continuing Calibration criteria were met. No action was required.

III.) Blanks:

There were no detections reported in the blanks associated with this data set. No action was required.

IV.) Laboratory Control Samples (LCS):

All LCS Recovery criteria were met. No action was necessary.

V.) Duplicate Sample Analysis:

MD analysis was performed on a client sample from SDG K1110641. All duplicate criteria were met and no action was taken.

VI.) Matrix Spike / Matrix Spike Duplicate (MS/MSD):

Please see the Major Issues section for this fraction the SDG.

VII.) Field Duplicates:

There were no field duplicates associated with this SDG. No action was required.

VIII.) Sample Result, Calculation/Transcription Verification:

All criteria were met. No action was required.

***FLUORIDE***

**SUMMARY**

I.) General:

The analyses for fluoride were performed by ion chromatography according to SW 846 Method 9056.

It was noted by the validator that the Form I for this fraction incorrectly lists the extraction date for all SDG samples as 11/16/11. Upon verification of the raw data, the validator determined that the correct extraction date was 11/15/11 and lined through the incorrect date and made a notation documenting the correct extraction date.

All laboratory data were acceptable with qualifications.

**MAJOR ISSUES**

There were no major problems for this fraction of the SDG.

**MINOR ISSUES**

I.) Holding Times:

All Holding Time criteria were met. No action was required.

II.) Calibration:

All Calibration criteria were met. No action was required.

III.) Blanks:

Fluoride was detected at 0.2 mg/kg in continuing calibration blank CCB2. The samples results for fluoride in the SDG samples, which were below the CRQL, were flagged as undetected (U) with the results being raised to the CRQL.

IV.) Laboratory Control Samples (LCS):

All LCS Recovery and LCSD duplicate precision criteria were met. No action was necessary.

V.) Duplicate Sample Analysis:

MD analyses data were not submitted for this fraction of the SDG. All positive and non-detect sample results were flagged as estimated (J) and (UJ).

VI.) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

MS / MSD analyses data were not submitted for this fraction of the SDG. All positive and non-detect sample results were flagged as estimated (J) and (UJ).

VII.) Field Duplicates:

There were no field duplicates associated with this SDG. No action was required.

VIII.) Sample Result, Calculation/Transcription Verification:

All criteria were met. No action was required.

***NITRITE***

**SUMMARY**

I.) General:

The analyses for nitrite were performed by ion chromatography according to EPA Method 353.2.

All laboratory data were acceptable with qualifications.

**MAJOR ISSUES**

There were no major problems for this fraction of the SDG.

**MINOR ISSUES**

I.) Holding Times:

The 54 hours between sample collection and sample extraction for the SDG samples exceeded the 48 hour QC limit. All positive and non-detect results for these samples were flagged as estimated (J) and (UJ).

II.) Calibration:

All Calibration criteria were met. No action was required.

III.) Blanks:

Nitrite was detected at 0.11 mg/kg in method blank K1110689-MB1. The results for nitrite in the SDG samples, which were less than the CRQL, were flagged as undetected (U) with the result being raised to the CRQL.

IV.) Laboratory Control Samples (LCS):

All LCS Recovery and LCSD duplicate precision criteria were met. No action was necessary.

V.) Duplicate Sample Analysis:

MD analyses were performed on SDG sample CZBS0102S005. All Duplicate Sample Analysis criteria were met. No action was required.

VI.) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

MS analysis data was not submitted for this fraction of the SDG. All positive and non-detect results for this fraction of the SDG were flagged as estimated (J) and (UJ).

VII.) Field Duplicates:

There were no field duplicates associated with this SDG. No action was required.

VIII.) Sample Result, Calculation/Transcription Verification:

All criteria were met. No action was required.

***NITRATE + NITRITE***

**SUMMARY**

I.) General:

The analyses for nitrate + nitrite were performed by ion chromatography according to EPA Method 353.2.

All laboratory data were acceptable without qualifications.

**MAJOR ISSUES**

There were no major problems for this fraction of the SDG.

**MINOR ISSUES**

I.) Holding Times:

All Holding Time criteria were met. No action was required.

II.) Calibration:

All Calibration criteria were met. No action was required.

III.) Blanks:

There were no detections in the blank associated with this fraction of the SDG. No action was required.

IV.) Laboratory Control Samples (LCS):

All LCS Recovery and LCSD duplicate precision criteria were met. No action was necessary.

V.) Duplicate Sample Analysis:

MD analyses were performed on SDG sample CZBS0102S005. All Duplicate Sample Analysis criteria were met. No action was required.

VI.) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

MS analysis was performed on SDG sample CZBS0102S005. All MS criteria were met. No action was required.

VII.) Field Duplicates:

There were no field duplicates associated with this SDG. No action was required.

VIII.) Sample Result, Calculation/Transcription Verification:

All criteria were met. No action was required.

*NITRATE*

**SUMMARY**

I.) General:

The analyses for nitrate were performed by ion chromatography according to EPA Method 353.2.

All laboratory data were acceptable with qualifications.

The results for nitrate were reported by subtracting the nitrite results from the nitrate +nitrite results generated by the laboratory. The calculations were verified by the validator and it was determined that the reported results for nitrate were not correct since the reported values were greater than then nitrate+nitrite results. After adjusting for the non-detect nitrite results based on blank contamination, the validator determined that the correct nitrate results were 15.0 mg/kg for sample CZBS0102S005 and 11.6 mg/kg for sample CZBS0100S005. The incorrect results on the Form Is were lined through by the validator and replaced with the correct values. Since the nitrite analyses were qualified as estimated based on holding time criteria, it was determined by the validator that the results for nitrate should be qualified as estimated (J).

*CYANIDE*

**SUMMARY**

I.) General:

The analyses for cyanide were performed according to EPA Method 9012A.

All laboratory data were acceptable without qualifications.

**MAJOR ISSUES**

There were no major problems for this fraction of the SDG.

**MINOR ISSUES**

I.) Holding Times:

All Holding Time criteria were met. No action was required.

II.) Calibration:

All Calibration criteria were met. No action was required.

III.) Blanks:

There were no detections in the blanks associated with this SDG. No action was required.

IV.) Laboratory Control Samples (LCS):

One LCS was analyzed for this fraction of the SDG. All LCS criteria were met. No action was necessary.

V.) Duplicate Sample Analysis:

Batch MD analyses were submitted for a client sample form SDG K1110467. The RPD exceeded the QC limit, but was not considered meaningful since the sample result was well below the CRQL. No action was required.

VI.) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

Batch MS / MSD data were submitted for a client sample from SDG K1110467. All MS / MSD criteria were met. No action was required.

VII.) Field Duplicates:

There were no field duplicates associated with this SDG. No action was required.

VIII.) Sample Result, Calculation/Transcription Verification:

All criteria were met. No action was required.